

LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES



**OFFICE OF FISHERIES
INLAND FISHERIES SECTION**

PART VI -B

WATERBODY MANAGEMENT PLAN SERIES

CANE RIVER LAKE

**WATERBODY EVALUATION &
RECOMMENDATIONS**

CHRONOLOGY

June 2014 - Prepared by

Ricky Yeldell, Biologist Manager, Toledo Bend Research Station

The remainder of this page intentionally left blank.

TABLE OF CONTENTS

WATERBODY EVALUATION.....	4
STRATEGY STATEMENT	4
Recreational	4
Commercial	4
Species of Special Concern	4
Recreational Fishing Regulations	4
Recreational Species	4
Commercial Species	11
Species of Special Concern	14
HABITAT EVALUATION	14
Aquatic Vegetation	14
Substrate	15
Artificial Structure	15
CONDITION IMBALANCE / PROBLEM	16
CORRECTIVE ACTION NEEDED	16
RECOMMENDATIONS.....	16

WATERBODY EVALUATION

STRATEGY STATEMENT

Recreational

Sportfish species are managed to provide a sustainable population while providing anglers the opportunity to catch or harvest numbers of fish adequate to maintain angler interest and efforts.

Commercial

Cane River Lake does not support significant numbers of fish species that normally comprise a commercial fishery. Catfish, spotted gar, freshwater drum and bowfin are present in the lake and are managed to provide sustainable populations.

Species of Special Concern

Paddlefish, *Polyodon spathula* are known to occur in this reservoir likely due to the presence of Natchitoches Federal Fish Hatchery on the shoreline of the lake. It is possible for young specimens to inadvertently escape during hatchery operations.

EXISTING REGULATIONS

Recreational Fishing Regulations

Statewide recreational fishing regulations are in effect at Cane River Lake. Recreational fishing regulations may be viewed at the link below:

<http://www.wlf.louisiana.gov/fishing/regulations>

Commercial Fishing Regulations

Statewide commercial fishing regulations are in effect at Cane River Lake. Louisiana's commercial fishing regulations may be viewed at the link below:

<http://www.wlf.louisiana.gov/fishing/regulations>

SPECIES EVALUATION

Recreational Species

Largemouth Bass

Angler harvest and effort

A creel survey was initiated in January 1989 to determine angler effort and catch rates. This access point survey was conducted on four weekend days and two weekdays per month during the calendar year of 1989. In 1996, a second access point creel survey was conducted for an eight month period from March to October. The survey dates included four weekend days and two weekdays each month.

The largemouth bass (LMB) fishery is an important component of Cane River Lake. Anglers logged 63,652 hours fishing on Cane River Lake in 1989 with 53,792 hours (84.5%) directed toward largemouth bass. Specific results derived from analysis of largemouth bass angler information gathered during the two creel surveys are given in Table 1.

Table 1. Largemouth bass angler information taken from creel surveys conducted at Cane River Lake, Louisiana in 1989 and 1996.

1989 (January-December) 15 fish creel limit 1996 (March-October) 10 fish creel limit.		
	1989	1996
NUMBER OF LARGEMOUTH BASS ANGLERS	12,462	10,125
MEAN NUMBER OF ANGLERS IN PARTY	1.77	1.83
MEAN TRIP LENGTH (HOURS)	4.19	5.14
MEAN ONE-WAY DISTANCE TRAVELED (MILES)	35	38

Creel survey data were used to determine bass angler catch statistics. These values are useful in assessing angler success and angler harvest. Catch statistics for largemouth bass anglers are shown in Table 2.

Table 2. Statistics for LMB anglers surveyed at Cane River Lake, Louisiana for 1989 and 1996.

1989 (January-December) 15 fish creel limit 1996 (March-October) 10 fish creel limit.		
	1989	1996
NUMBER LMB CAUGHT	15,203	23,567
NUMBER LMB HARVESTED	9,336 (61.4% of catch)	14,832 (63% of catch)
NUMBER LMB RELEASED	5,866 (38.6% of catch)	8,735 (37% of catch)
POUNDS LMB HARVESTED	13,797	22,737
AVERAGE WEIGHT PER LMB (POUNDS)	1.66	1.43
LMB CAUGHT PER TRIP	2.33	2.48
LMB HARVESTED PER TRIP	1.32	1.34
LMB CAUGHT PER HOUR	0.5	0.48
LMB HARVESTED PER HOUR	0.28	0.25

Size distributions (in inch groups) for largemouth bass harvested by bass anglers during creel surveys conducted at Cane River Lake, Louisiana are shown in Figure 1.

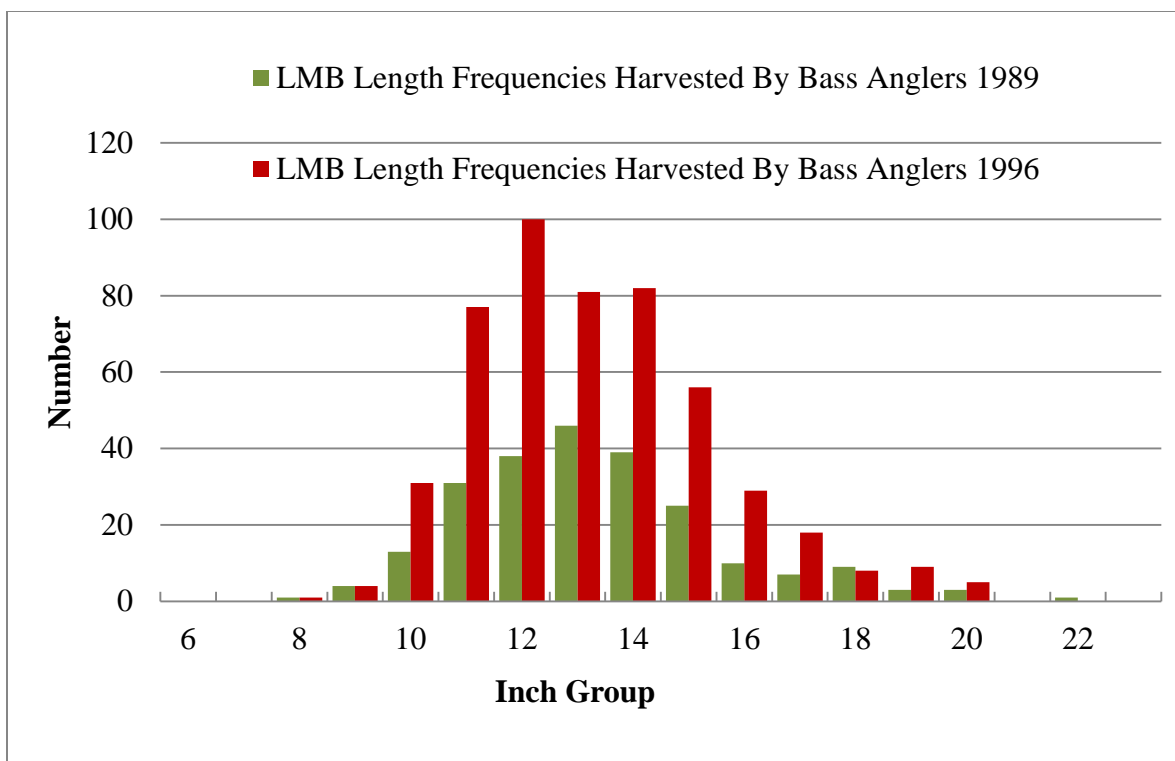


Figure 1. The size distributions (inch groups) of largemouth bass harvested by bass anglers during creel surveys at Cane River Lake, LA 1989 and 1996.

The creel data indicates that bass anglers harvested approximately 62% of all bass caught. The median length for largemouth bass harvested by bass anglers was 13 inches for both surveys.

Relative abundance and relative weight

Analysis of electrofishing data from Cane River Lake reveals the presence of a stable largemouth bass population that exhibits slight fluctuations in abundance over time. Stock, quality and preferred-size bass demonstrate a slight increase in abundance since 2001.

The catch-per-unit-effort (CPUE) values for selected largemouth bass size groups collected during spring electrofishing sampling are shown in Figure 2.

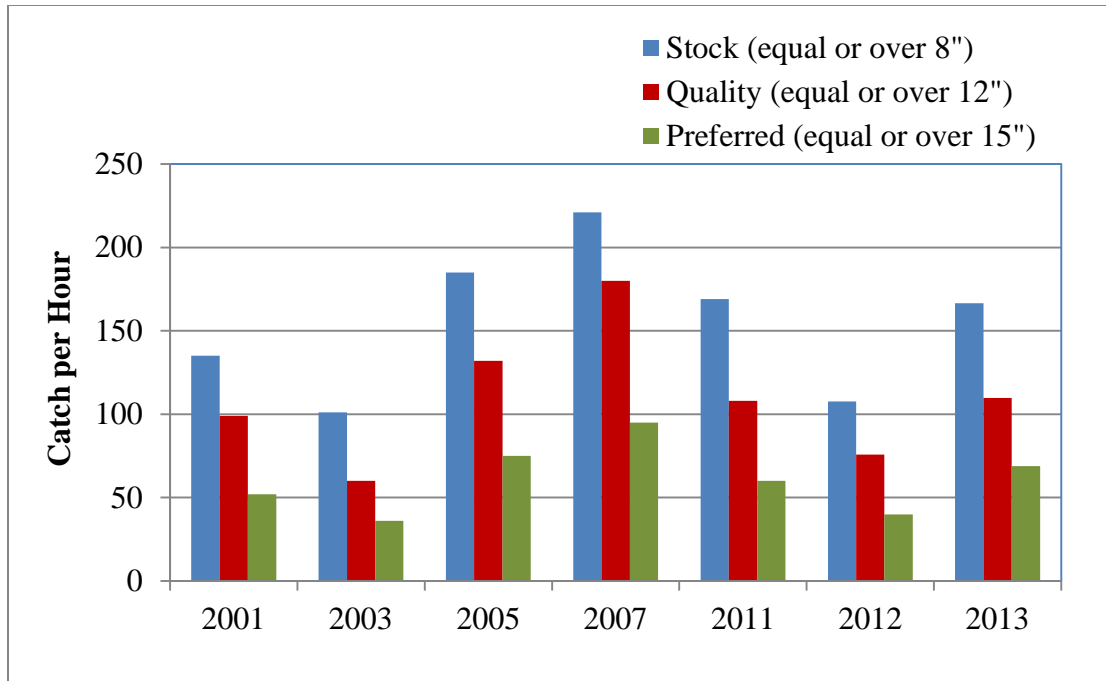


Figure 2. CPUE for largemouth bass of stock, quality and preferred-size largemouth bass collected during spring electrofishing at Cane River Lake, LA from 2001 to 2013.

Average relative weights (W_r) of largemouth bass sampled from Cane River Lake during fall electrofishing in 2001, 2003, 2005, 2007 and 2013 are stock-size – 91, quality-size – 93.7, preferred-size – 96.2 and memorable-size – 96.1, respectively. Relative weights for largemouth bass by size group are depicted in Figure 3.

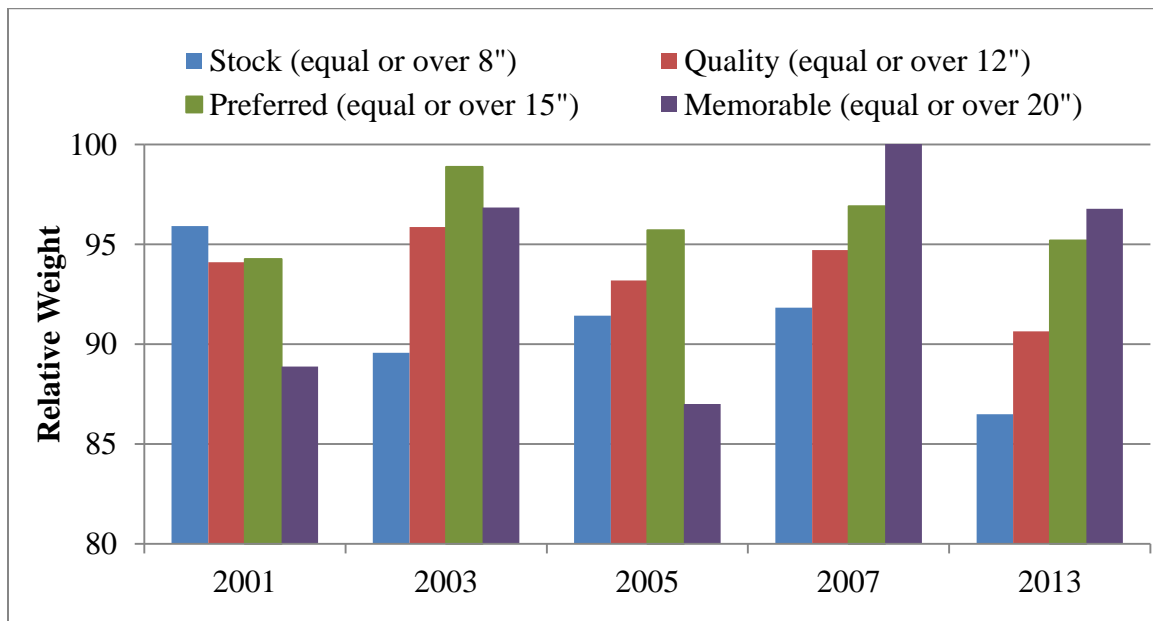


Figure 3. Relative weights of largemouth bass collected at Cane River Lake, LA during fall electrofishing during from 2001, 2003, 2005, 2007 & 2013.

When comparing relative weights for largemouth bass collected in 2013 to the average W_r of the previous four sample periods, W_r for stock-size fish decreased by 6.2%, W_r for quality-size fish decreased by 4.1%, and W_r for preferred-size fish decreased by 1.25%. Relative weight values for largemouth bass of stock-size and quality-size fish show a downward trend since 2001 while relative weight values for preferred-size and memorable-size largemouth bass show an increase during the same period.

Largemouth bass genetics

Cane River Lake was stocked with 35,000 Florida strain largemouth bass fingerlings in 1993. Florida strain largemouth bass were stocked into the reservoir to incorporate a genetic trait associated with larger maximum sized adult fish. Genetic samples taken from the bass population in 2007 indicate that the percentage of bass with the Florida influence ($F - F_x$) was 25 percent, while largemouth bass with the genetic signature defined as pure Florida comprised 6 percent (Table 3).

Table 3. Genetic analysis of largemouth bass collected from Cane River Lake, LA.

Year	Number	Northern	Florida	Hybrid	Florida Influence
2007	84	75%	6%	19%	25%

Sunfish (Bluegill & Redear)

Sunfish anglers comprise a small portion of the total angler group at Cane River Lake. Annual catch information for bluegill sunfish appears in Table 4.

Table 4. Bluegill harvest data collected during annual creel surveys at Cane River Lake, Natchitoches Parish, Louisiana. Estimates are for bream anglers.

1989 (January-December) 1996 (March-October)		
	1989	1996
NUMBER BLUEGILL CAUGHT	18,320	73,898
NUMBER BLUEGILL HARVESTED	18,320 (100% of catch)	73,898 (100% of catch)
POUNDS HARVESTED	2,878	15,625
AVERAGE WEIGHT PER BLUEGILL (POUNDS)	0.14	0.25
BLUEGILL CAUGHT PER TRIP	17.7	12.0
BLUEGILL CAUGHT PER HOUR	6.3	2.76
BLUEGILL HARVESTED (NUMBER PER HOUR)	6.3	2.76
BLUEGILL HARVESTED (POUNDS PER HOUR)	1.09	0.53

Crappie

Relative abundance and size structure indices

Crappies are present in Cane River Lake and provide recreational opportunity for anglers. Crappie were sampled with gillnets during six periods between 2000 and 2014. Total catch-per-unit-of-effort (number of fish caught per hour) values are given in Figure 4.

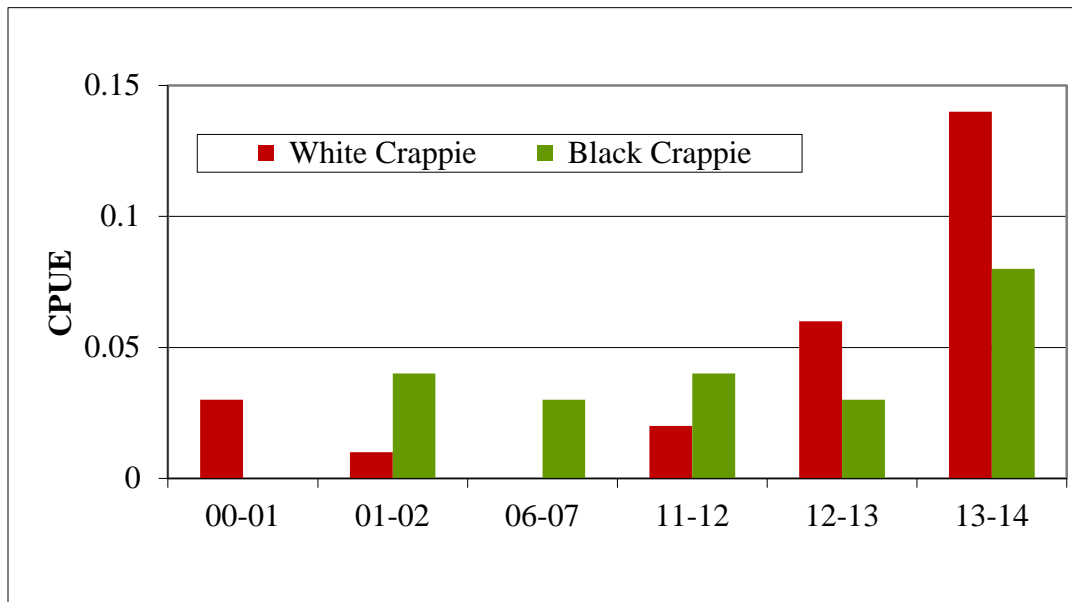


Figure 4. CPUE (number caught/100'/net night) of white and black crappies with gillnets from Cane River Lake, LA in 2000-2002, 2006-2007, 2011-2014.

These results indicate the presence of a stable to increasing population of crappie in Cane River Lake. They also indicate a slightly higher frequency of occurrence of white crappie than black crappie. The cumulative catch per unit effort for white crappies was 0.26 fish compared to 0.22 fish for black crappies. The crappie population of Cane River Lake appears to follow a cyclical pattern often observed in waterbodies statewide.

Angler harvest and effort

Crappie anglers were interviewed as part of the previously mentioned creel surveys. However, no crappies were recorded in either survey period.

Catfish

While each of the three major species of catfish, channel catfish (*Ictalurus punctatus*), blue catfish (*Ictalurus furcatus*), and flathead catfish (*Pylodictis olivaris*), are found in this reservoir, channel catfish is the most abundant species. To increase recreational angling opportunity, LDWF stocked sixty adult flathead catfish into the lake in 2005 and 4,009 channel catfish fingerlings in 2009. Gillnetting results for the three species of catfish are shown in Figures 5 and Figure 6.

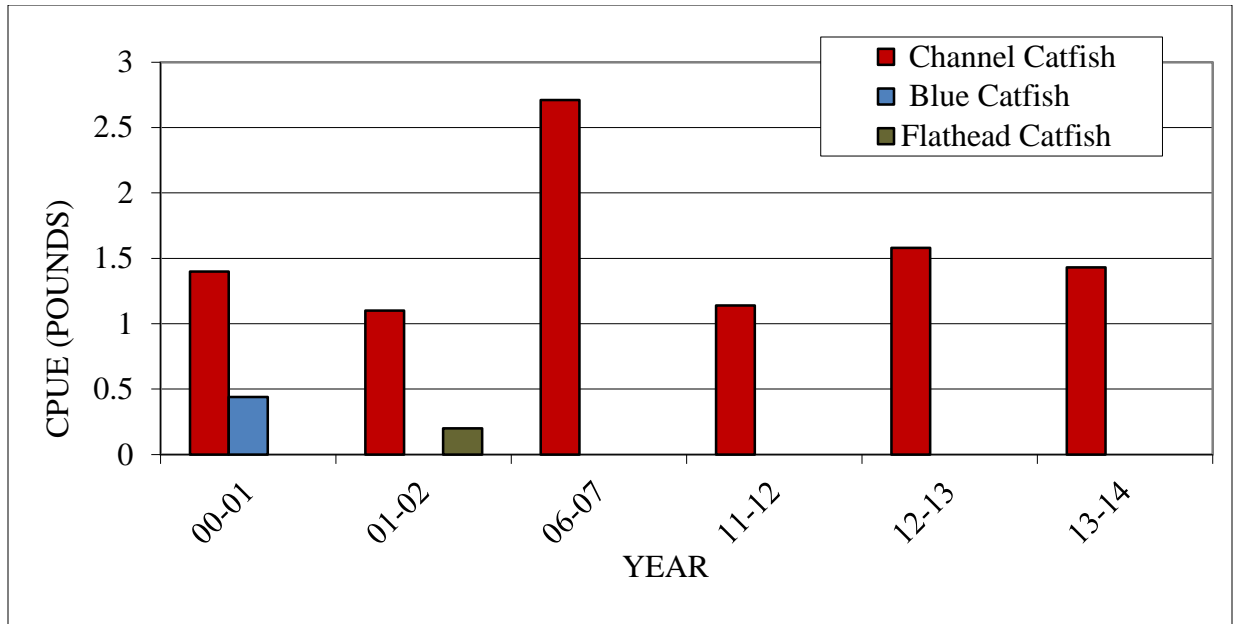


Figure 5. Total CPUE (pounds per net night) of channel catfish, blue catfish and flathead catfish collected in Cane River Lake, LA by gillnet sampling 2000-2002, 2006-2007, and 2011-2014.

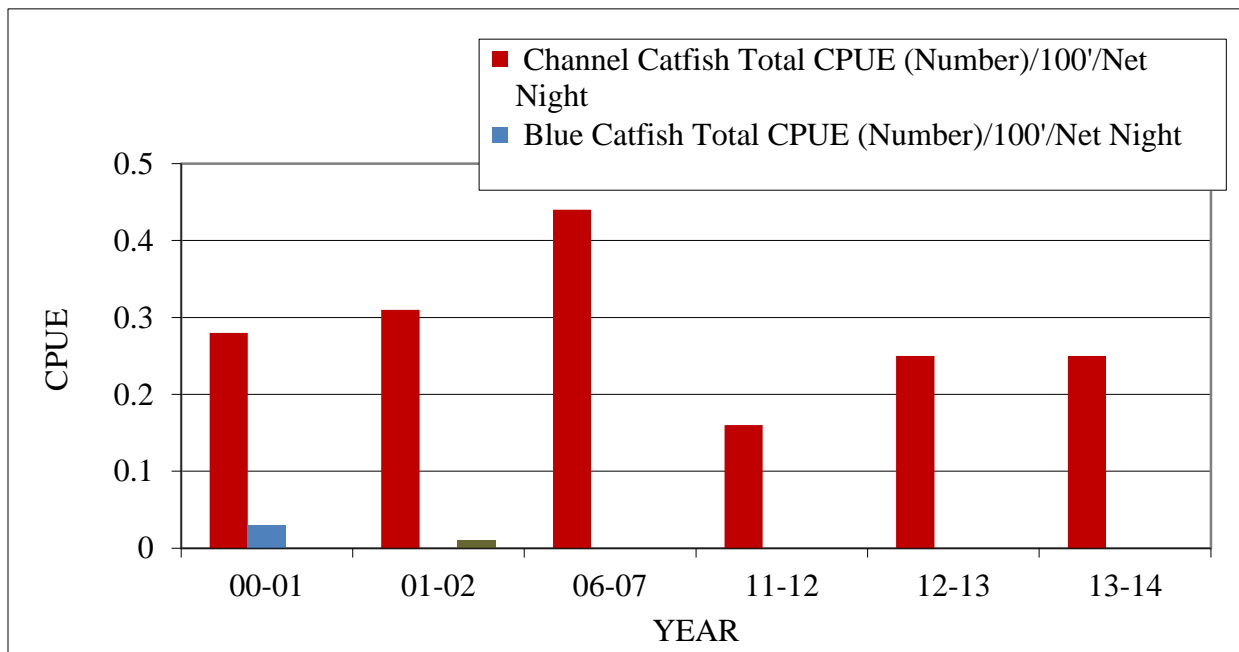


Figure 6. The total CPUE (number per net night) of channel catfish, blue catfish and flathead catfish collected in Cane River Lake, LA by gillnet sampling 2000-2002, 2006-2007, and 2011-2014.

Forage

Forage fish are those that are available for use as food by predatory fishes. In general, all individuals up to six inches in length are forage fish, particularly when discussing forage for largemouth bass. Forage sampling conducted by electrofishing in the fall of 2013 resulted in 86.53 pounds per hour of forage fishes equal to or less than six inches in length. Figure 7 depicts forage results from 2013.

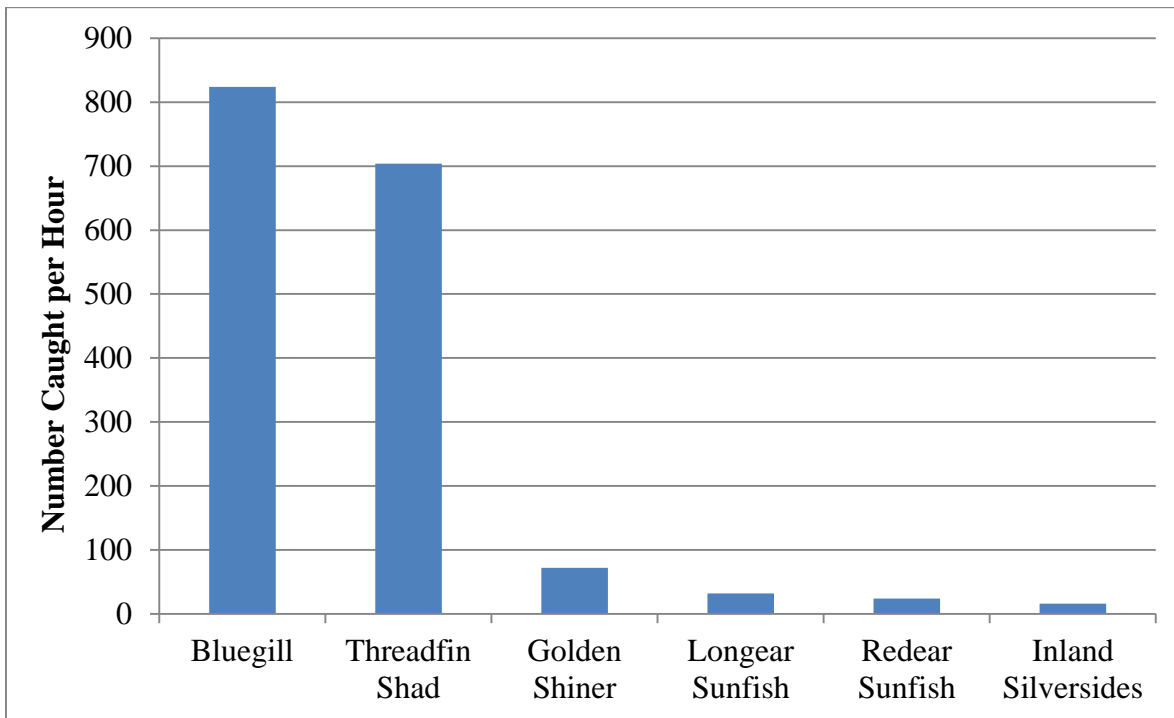


Figure 7. Number by species of forage fish collected per hour during fall electrofishing at Cane River Lake, LA in 2013.

Commercial Species

Data collected with standardized gillnets is presented in Figures 8 - 11. Standardized gillnet sampling involves the use of 100 yards each of 2.5 inch, 3 inch, 3.5 inch and 4 inch monofilament gill nets at each station.

Carp

While common carp (*Cyprinus carpio*) are not subject to species specific management, they are considered commercial species. Figure 8 depicts total CPUE of common carp collected in gillnets at Cane River Lake.

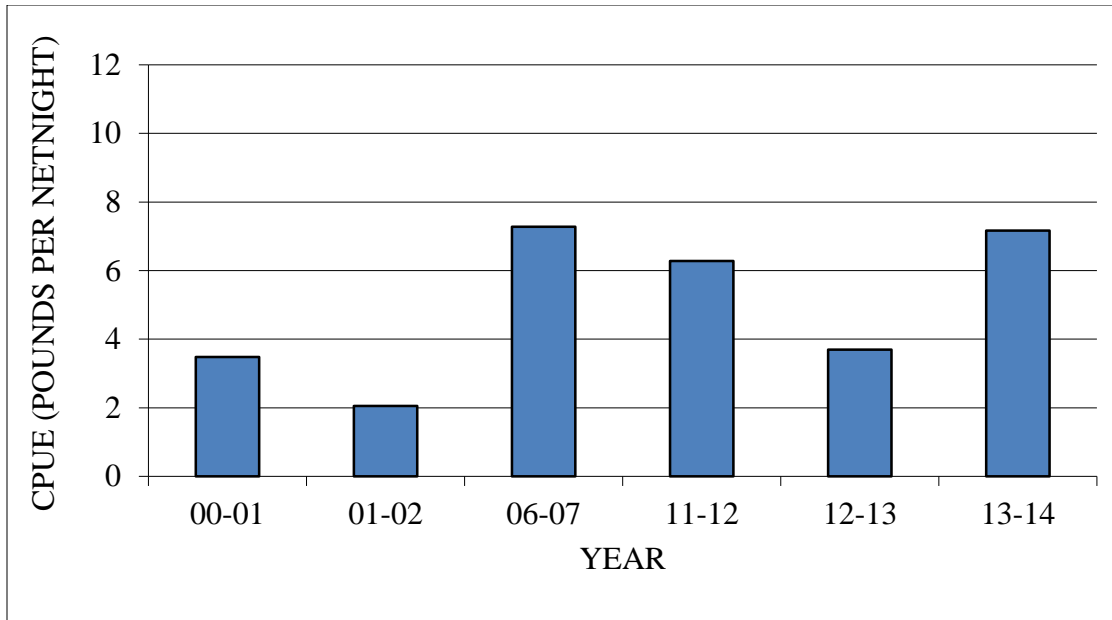


Figure 8. CPUE (pounds/100'/net night) of common carp taken by gillnet sampling at Cane River Lake, LA during sampling periods 2000-2002, 2006 – 2007, 2011 - 2014.

Freshwater Drum

Freshwater drum (*Aplodinotus grunniens*) is occasionally collected during standardized sampling at this lake. Abundance of this species remains relatively low. Catch data from standardized gillnets is presented in Figure 9.

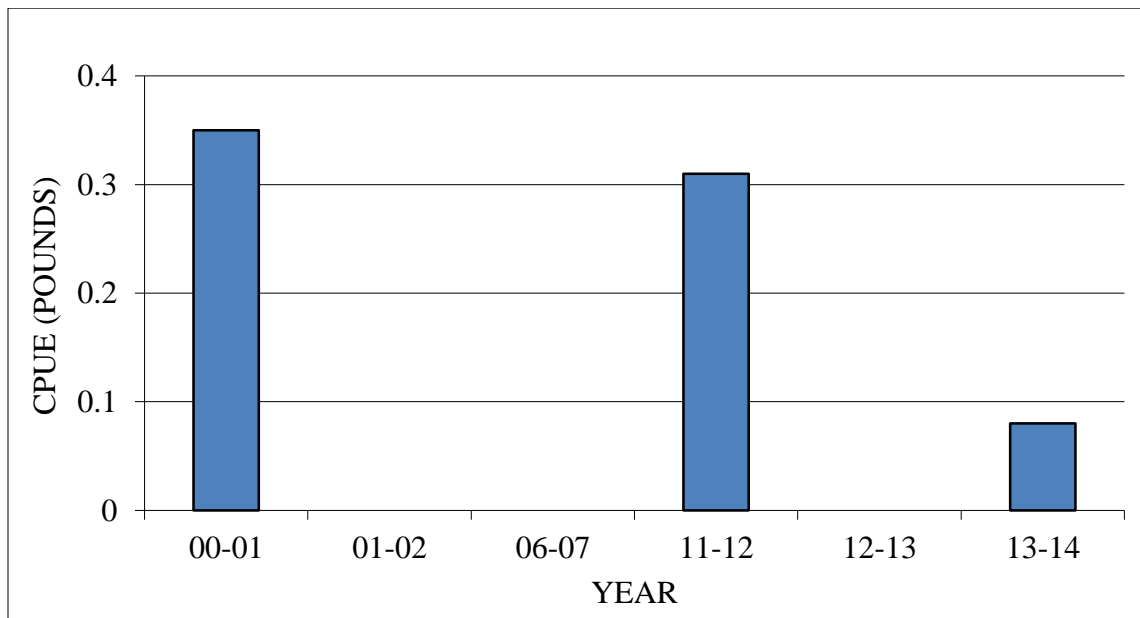


Figure 9 Total CPUE (pounds/100'/pet night) of freshwater drum taken by gillnet sampling at Cane River Lake, LA during sampling periods 2000-2002, 2006 – 2007, 2011 - 2014.

Bowfin

Bowfin (*Amia calva*) is not a major commercial species in Cane River Lake. Bowfins are occasionally collected during standardized sampling. The CPUE for bowfins collected in gillnets is depicted in Figure 10.

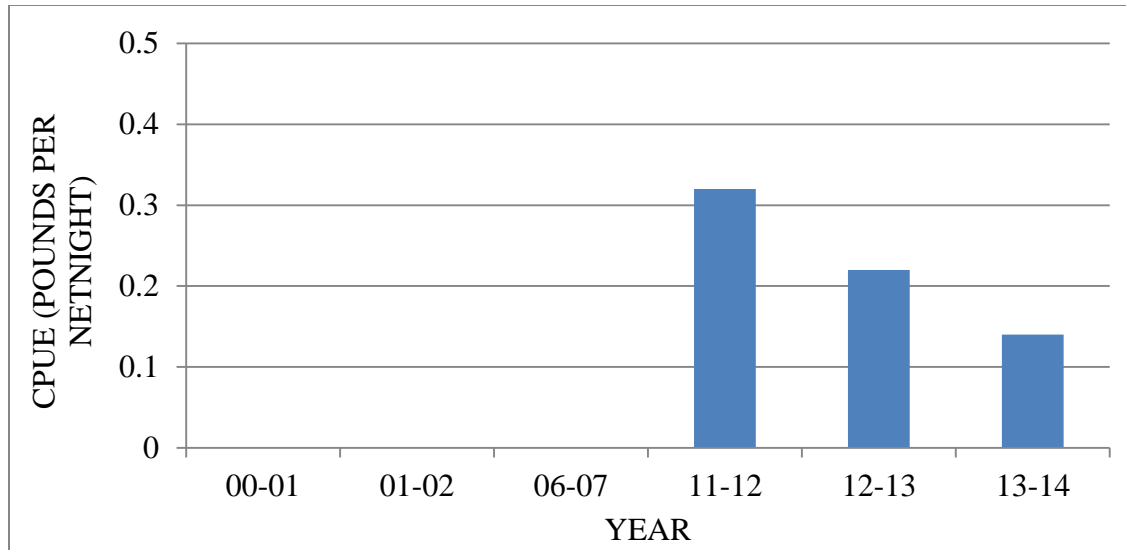


Figure 10. Total CPUE (pounds/100'/net night) of bowfin taken by gillnet sampling at Cane River Lake, LA during sampling periods 2000-2002, 2006 – 2007, 2011 - 2014.

Garfish

Spotted gar (*Lepisosteus oculatus*) is the only species of garfish that occur in this reservoir. The CPUE for spotted gar collected in gillnets is depicted in Figure 11.

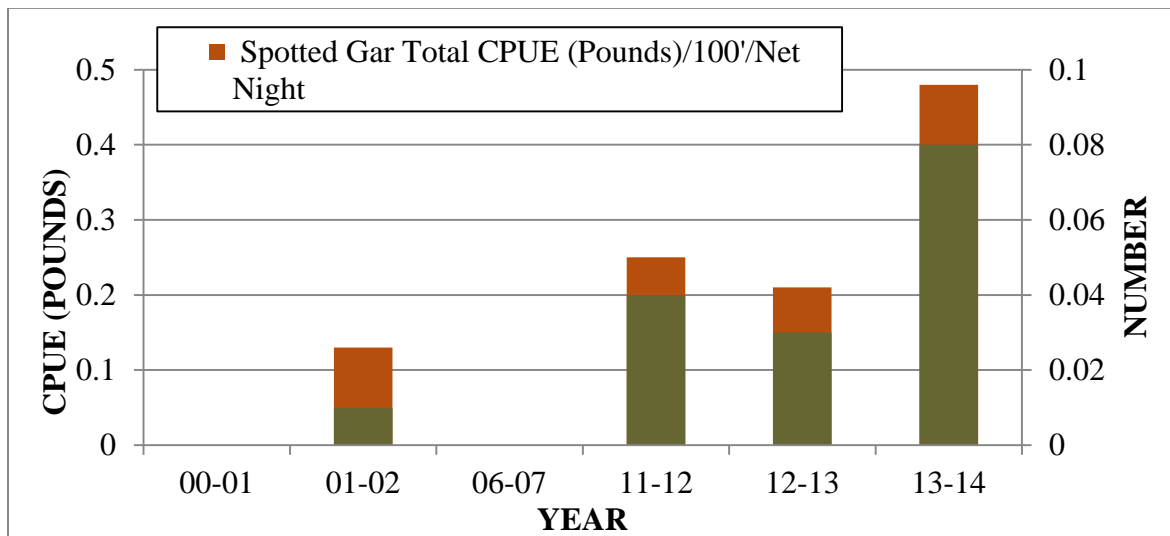


Figure 11. Total CPUE (pounds/100'/pet night and number/100'/net night) of spotted gar taken by gillnet sampling at Cane River Lake, LA during sampling periods 2000-2002, 2006 – 2007, 2011 - 2014.

Species of Special Concern

Paddlefish (*Polyodon spathula*) occur in gillnetting records from this reservoir. This is likely due to the presence of a Natchitoches Federal Fish Hatchery on the lake. It is possible for young paddlefish to inadvertently escape during hatchery operations. The CPUE for paddlefish collected in gillnets is depicted in Figure 12.

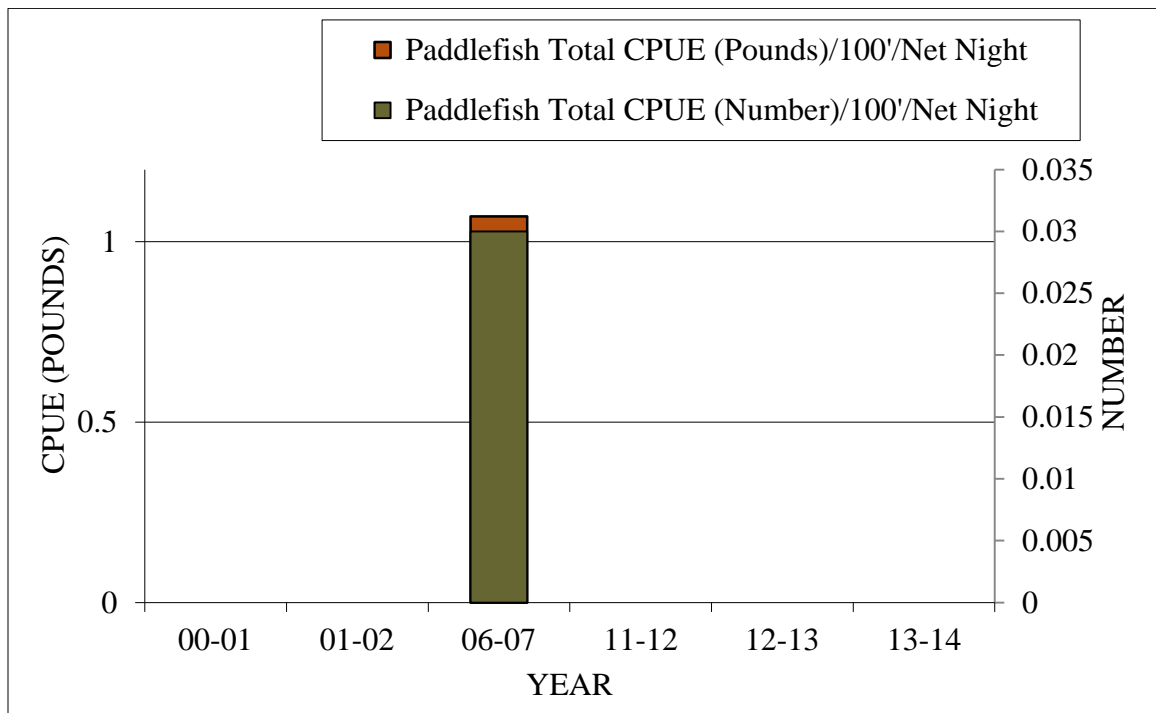


Figure 12. CPUE (pounds/100'/net night and number/100'/net night) of paddlefish from gillnet sampling at Cane River Lake, LA during sampling periods 2000-2002, 2006 – 2007, 2011 - 2014.

HABITAT EVALUATION

Aquatic Vegetation

For many years, the most problematic aquatic plant species at Cane River Lake was water hyacinth (*Eichhornia crassipes*). Herbicide treatments directed toward this species comprised 36% of all acreage treated by LDWF during the period 2005-2013. However, water hyacinth coverage has been minimal since 2010.

In recent years, submerged aquatic vegetation has become more problematic at Cane River Lake. In 2010, LDWF cooperated with the Cane River Waterway Commission to treat 63 acres of coontail (*Ceratophyllum demersum*) and spatterdock (*Nuphar luteum*) in the upper end of the lake with Aquathol K at a rate of 10 gallons per surface acre. The Aquathol K was provided by the commission and applied by LDWF.

In 2011, LDWF cooperated with the Cane River Waterway Commission to treat 60.6 acres of hydrilla (*Hydrilla verticillata*) in the lower end of Cane River Lake. The Aquathol K was provided by the commission and applied by LDWF via injection at a rate of 15 gallons per surface acre.

In May 2013, LDWF assisted the Cane River Waterway Commission in the treatment of coontail. The treatment area included 236 surface acres along 18 miles of shoreline. A total of 5,500 gallons of Aquathol K was used. The chemical concentration used was 2 ppm of endothall. Chemicals for this treatment were purchased by the Commission and applied by LDWF.

Each of the three Aquathol K treatments made at Cane River Lake in years 2010, 2011 and 2013 was effective in reducing the coverage of submerged aquatic vegetation.

In April 2013, giant salvinia (*Salvinia molesta*) was discovered in Cane River Lake near the Shell Beach boat ramp by LDWF staff during standardized fisheries sampling. LDWF staff removed approximately one gallon of plant material by means of dip nets. Subsequently, a LDWF spray crew made foliar herbicide applications to the general area to ensure removal of the plant. The Cane River Patrol was notified regarding the discovery and was advised to remain vigilant in monitoring the area.

The giant salvinia found in Cane River Lake most likely originated from a boat trailer in the Shell Beach parking lot. LDWF staff noted a boat trailer that had giant salvinia plants on it parked in the Shell Beach parking lot at the time of the initial discovery.

No giant salvinia has been noted in Cane River Lake since April 2013.

Durable Natural Structure

Very little woody structure exists in this lake due to its origin as a streambed. Occasional fallen trees are found along the shoreline.

Substrate

Information from the Natural Resources Conservation Service shows that soils in the Cane River Lake watershed range from silt loam to sandy loam to various clay types. Soil pH values fall between 5 and 7.3 for the drainage area. Soil fertility is classified as moderate.

Artificial Structure

No artificial reef structures have been placed in this reservoir by LDWF. Placement of brush piles is a common practice of local anglers.

CONDITION IMBALANCE / PROBLEM

Aquatic vegetation is sometimes problematic at Cane River Lake. Primary concerns are related to submerged aquatic vegetation including hydrilla and coontail. Secondly, floating types such as water hyacinth and giant salvinia require annual treatment. Spatterdock has been persistent in recent years.

CORRECTIVE ACTION NEEDED

LDWF will periodically assess the vegetation coverage of Cane River Lake by both physical survey and regular communication with the Cane River Patrol. LDWF will respond appropriately based upon such assessments.

RECOMMENDATIONS

Simply stated, the aquatic plant control recommendation for Cane River Lake is a continuation of past practices. The Cane River Waterway Commission closely monitors this waterbody and communicates well with LDWF when problems arise. It has not yet been necessary for LDWF to aggressively monitor plant coverage on this lake.

Historically, the commission has purchased herbicides needed for large-scale treatments and LDWF has cooperated with the commission by serving in an advisory role as well as providing labor and equipment for large-scale treatments. LDWF has typically provided personnel, equipment and chemicals for spot treatments in response to requests from the commission.

LDWF will continue to maintain a good line of communication with the Cane River Waterway Commission with regard to aquatic plants on this lake. Additionally, LDWF staff will make observations of aquatic plant coverage during routine fisheries sampling on the lake. LDWF will respond appropriately with spot treatments of foliar herbicides as a first line of action for the treatment of floating and emergent vegetation upon requests for assistance made by the Cane River Waterway Commission.

Alligator weed in undeveloped shoreline areas will be treated with foliar applications of imazapyr (0.5 gal/acre) and Turbulence (0.25gal/acre) surfactant. Alligator weed in developed shoreline areas will be treated with foliar applications of imazamox (Clearcast,0.5 gal/acre) and Turbulence (0.25 gal/acre) surfactant.

Water hyacinth will be treated with foliar applications of glyphosate (0.75 gal/acre) and a non-ionic surfactant (0.25 gal/acre) from March 15 to September 15 of each year. Water hyacinth will be treated with foliar applications of 2,4-D (0.5 gal/acre) and Red River 90 (1 pint/acre) from September 16 to March 14.

Giant and/or common salvinia will be treated with foliar applications of glyphosate (0.75 gal/acre) and diquat (0.25 gal/acre) with Aqua King Plus (0.25 gal/acre) and Air Cover (12 oz/acre) surfactants from April 1 - October 31. Salvinia will be treated with foliar applications of diquat (0.75 gal/acre) and a non-ionic surfactant (0.25 gal/acre) from November 1 – March 31.

Submerged aquatic vegetation will be controlled in response to requests from the Cane River Waterway Commission. It is recommended that the Commission use endothall at 2 ppm for submerged aquatic vegetation control.

Standardized fish sampling will continue as currently scheduled.